Exploring Heavy Metals and Human Health through Concept Maps

Environmental Science Grade 11, SVN3M

Strand C-Human Health and the Environment

Specific Expectations

*C3.1 identify the main pollutants and environmental contaminants that can affect human health*

*C3.2 describe the effects of a variety of environmental factors on human health*

*C3.3 describe ways in which a variety of environmental contaminants can enter the human body*

Learning Outcomes: Students will be able to identify the various heavy metals that are found as contaminants in the environment, how they enter the human body and the effects they have on human health. Students will be required to synthesize information from a text individually and be able to explain and justify their work to a small group.

**Note:** This activity involves students reading the attached text (Human Health and Heavy Metals Exposure by Howard Hu) and synthesizing the important concepts. I am assuming that students are familiar with the idea of concept mapping. It is important that you as the teacher prepare an exemplar list of key concepts for group discussion prior to beginning the activity.

1. Have students read through the article provided and choose one metal to focus on. Have the student make a list of the concepts and information that they think are important relating to that metal (15-25 pieces of information should be the target). If students are having difficulty further direction could be given through questions: Which metals did you choose? Why is this metal of concern in the environment? How does a particular metal enter the body? How does this metal effect human health? Who is at most risk from exposure?

Have students write their words on sticky notes.

1. Have students form (or assign) groups of 3 (students who have chosen the same metal will work together) and discuss their individual lists. Discussions will include why they think their chosen concepts are important and how they relate to the overall article.
2. Next have the groups narrow down their concept terms into a group of 8-12 key terms.
3. As a group of three have the students create a draft concept map, linking the words on their sticky notes together using prepositions (eg. **Lead** is particularly **Toxic** to **Children** resulting in **deficits in intellectual development**)
4. After the groups have completed their concept maps, reveal the key concepts that you chose as most important. Have groups discuss the differences and similarities between your list and their groups list. Visit each group as they engage in their discussions and ask questions such as: Did anyone pick out any concepts that I don’t have on my list? Why did you feel they were important? Does anyone disagree with any of the concepts that I have selected? Why do you feel it is not important?
5. Have groups finalize their concept maps adding or removing terms as they see fit.
6. Each group will present their concept map to the class and explain the connections that they made.